UCAM-60B/65B Data Logger



Up to 20 k $\mu m/m$ with a resolution as high as 0.1 $\mu m/m$ measurement possible. (With Full bridge system)

UCAM-60B

- Easy to understand English presentation
- •Fluorescent display tube ensuring easy viewing in the field
- Built-in thermal printer for smooth confirmation of measured results

UCAM-65B

- Setting measuring conditions from PC and saving measured results to PC
- Interval measurement possible with no PC connected

Common to UCAM-60B and UCAM-65B

- •Measurement up to 20 k μ m/m with a resolution of 0.1 μ m/m (With full bridge system)
- Scanning at 50 ms/channel with dedicated scanners
- High-speed scanning at 20 ms/channel with internal scanners
- Up to 30 channels measurement with internal scanners
- •Up to 1000 channels measurement with external scanners
- PC card slot ensuring easy data collection
- DC operated version for operation where no AC outlet is available
- •Automatically set the gage mode for each channel by detecting the channel mode corresponding to the connected strain gages or strain-gage transducers possible.
- TEDS compatible (With internal scanner USS-61B/62B/63B)
- Control software UCS-60B (Optional for UCAM-60B) enables control from PC via Ethernet LAN or RS-232C. (When connecting via Ethernet LAN, use 2 straight cables and a LAN hub.)

Note 1: For TEDS, see page 9-17.

Note 2: When connecting via LAN use 2 straight cables and a LAN hub

The data logger UCAM-60B is an all-in-one measuring instrument developed in full pursuit of easier field measurement. Easy to operate keys, a bright readable display providing understandable presentation and a printer for immediate confirmation of measurement results. All these and more are incorporated in this compact unit to satisfy every need in field measurement. The UCAM-65B is a compact online data logger fully.

The UCAM-65B is a compact online data logger fully controlled from the PC.

Both models are connected to, and simultaneously be input signals from, strain gages, strain-gage transducers, civil engineering transducers with a thermal sensor, potentiometer sensors, thermocouples and DC voltageoutput instruments. They are also compatible with TEDSinstalled sensors having information conforming to IEEE template No. 33. While measurement in a maximum 30 channels is possible with the mainframe only, external scanners enable measurement in a maximum 1000 channels. Measured results are stored in internal memory. And for easy data transfer to PC, measured results are also saved in a flash ATA card or CF card inserted into the PC card slot. Furthermore, LAN and RS-232C interfaces are provided standard for connection to the PC, and the control software UCS-60B enables the PC to not only control the UCAM-60B/65B but also perform data processing for rosette analysis, etc. in the field by directly collecting data.

System Components

Bata I a marana						
Data Loggers	Models	Power Supply	Control Software UCS-60B			
	UCAM-60B-AC	AC only	Optional			
	UCAM-60B-DC	DC only	Optional			
	UCAM-65B-AC	AC only	Standard			
	UCAM-65B-AC-0	, (c 0)	Optional			
	UCAM-65B-DC	DConly	Standard			
	UCAM-65B-DC-0	De only	Optional			
Dedicated Scanners	USS-61B* for general purpose					
	USS-62B* for general purpose with NDIS connectors*					
	USS-63B* for civil engineering with lightning Arresters					
	The main unit is accommodated up to 3 dedicated					
	scanners.					
External Scanners	The main unit is connected to the following scanner					
	via the optional sca	nner interfa	ce.			
	USB-70 series via scanner interface USI-67A					
Scanner Interfaces	USI-67A for USB-70 series					
External I/O Unit	UIO-60A					
Control Software	UCS-60B					
*TEDS compatible						

*TEDS compatible

** TEDS compatible function is made effective by connecting TEDS installed sensor through NDIS connector.

Specifications

Data Logger UCAM-60B/65B	
Measuring Targets	
Strain gages, strain-gage transducers, civil engineering transduc	ers
with a thermal sensor, DC voltage-output or DC current-output	

instruments, potentiometer sensors, thermal sensors (Thermocouples and platinum resistance thermometer bulbs)

\sim		Scanners		External Scanners	
		Scanners	Dedicated	General purpose	Civil engineering
Measuring Targets			Scanners	USB- 70B- 10/20	USB- 70B- 30
		120 Ω	Yes	Yes	Yes
	Quarter bridge	240 Ω	Yes	Yes	Yes
	system	350 Ω	Yes	Yes	Yes
strain gagos	Quarter bridge	120 Ω	Yes	Yes	Yes
and	(True-dummy system)	240 Ω	Yes	Yes	Yes
Strain-gage	المراق المراجع	Active-dummy system	Yes	Yes	Yes
transducers	Hair bridge	Active-active system	Yes	Yes	Yes
	00 10 1000 32	Common dummy system		Yes	Yes
	Full bridge	Opposite-leg active system	Yes	Yes	Yes
	60 to 1000 Ω*2	Full-bridge system	Yes	Yes	Yes
Civil	Full bridge 120 Ω	Constant-current excitation	Yes		
engineering	Full bridge	Constant-current excitation	Yes	Yes	Yes
transducers	350 Ω	With temp. measuring function	Yes		Yes
Voltage DC voltage-output instruments		Yes	Yes	Yes	
Current	DC current	t-output instruments	Yes	Yes	Yes
		K	Yes	Yes	Yes
		Т	Yes	Yes	Yes
	Thermocouples	E	Yes	Yes	Yes
Temperature		J	Yes	Yes	Yes
		R	Yes	Yes	Yes
	Platinum	Pt100	Yes		Yes
	thermometer bulbs	JPt100	Yes		Yes
	Potentiome	ter sensors	Yes	Yes	Yes
	Built-in lightn	ing arresters	Yes (*1)		Yes
Scanner interface			N/A	UIS-	67A
*1. With L *2. 120 to	JSS-63B mou 1000 Ω in h	nted. igh-resolution mode.			
Channels Max. 30	with dedicat	ed scanners			

Max. 1000	with external	scanners connected

- Scanning Speed
- 50 ms/channel (Standard mode)
- 280 ms/channel (High-resolution mode)
- Note: Individually switchable for desired channels.
- 20 ms/channel (High-speed mode)
- Note: Collectively switchable for all channels of dedicated scanners.

Line Frequencies		EO	Hz Zono		60 Hz Zono	
Scanners	nners			50 Hz Zone 60 Hz Zone		
Dedicated scanner (Standard mo		50 ms/	/cha	annel		
Dedicated scanner (High-resoluti	280 ms/channel					
Dedicated scanner (High-speed n	20 ms/channel					
USB-70 series (standard mode of	ily)	0011	tondord mo	00	s.4 ms/channel	
respective modes. Be each individual chan	e are s ese, th s, 0.5	e following s, 1 s, 2 s, 5 s	spe s an	eds are set for d 10 s		
Scanning Speed	Standard	Mode	High-resoluti Mode	ion	High-speed Mode (20 ms/channel)	
Strain (Gage & transducer)	Yes	;	Yes	nei)	Yes	
Voltage/current-output sensor	Yes				Yes	
Civil engineering transducer	Yes	5				
Temperature sensor (TC, Pt)	Yes	5				
Potentiometer sensor	Yes	5			Yes	
Notes: 1. High-resolution n	node an	d high	-speed mod	e a	re selectable	
for dedicated sca	nners or	ily.	a a la is avail	اماما	المتعام والمعام	
Full bridge system	n nign-sp n.	seed n	IOUE IS avai	api	e only with	
Operating Modes Real-ti	me, mor	nitor, a	nd automat	tic		
Measurement Functions	- ,					
Initial Initial values are	measure	d and	stored in in	teri	nal memorv	
(Except for temp	eratures	meas	ured by civil	en	aineerina	
transducers with	tempera	ature n	neasuring fi	JUC	tion).	
Original Baw values are	measur	ed with	out subtract	tion	of initial values	
Measure Initial values a	are subtr	acted	from origina	alva		
(Except forte	mporati	iros mo	acurod by a	-ivil	onginooring	
	vith a th	armal	consor)		engineering	
	viui a uie	cipa fi	inction is as	tive	tod	
Easy Measure Autoze	Easy Measure Auto zero balancing function is activated.					
		tione la		eis.	coemcient	
	iuitipiica	tion by	/ calibration	:	efficients,	
Ca	alibration		DS, convers	ion	or measured	
Vá	alues to p	onysica	i quantities	,		
SC	aling an	a corre	ection.			
Engineering Units 59	9 units					
Automatic Measurement	t Functio	ons				
Irigger Measurement						
A relative value (Certain changing quantity) or an absolute value						
triggers measurement. In addition to the usual trigger function,						
a variable trigger function is provided with which the trigger value						
changes at each step d	luring me	easure	ment. With t	this	special function	
a trigger value and the measurement times (Repeat times)						
under the trigger cond	ition is re	gistere	d for each s	tep	to perform	
a series of automatic measurements in the order of steps.						
The maximum steps av	/ailable f	or setti	ng is 15 and	the	e repeat times	
may be a value selecte	d from a	range	of 1 to 9999	or	infinite.	
Trigger channels: 1 des	sired cha	nnel				
Trigger value: A desired	real num	ber of 6	effective fiau	res	or less Reference	
Reference value: Amou	int of leve	l shift t	o determine	the	first trigger value	
(Selected from	the sam	e rang	e as for the	tria	der values)	
Repeat times: 1 to 9000 (0 for infinite times)						
Measuring steps: Maximum 15						



Repeat times: 1 to 9999 (0 for infinite times) Maximum steps: 15



Data Loggers

Combinat	ion of tria	aar m	100CLIPO	nant and int		CURAMANT			
Trigger va	Combination of trigger measurement and interval measurement.								
Measuring	a times: M	ax 99	999						
Interval tir	me [.] Availal	ble in	a range	of					
	1 second t	0.990	davs 23	hours:59 mir	nutes:59	seconds			
storage Inter	nal memoi	rv ap	rox 7	VIB	lates.ss.				
Flash ATA card (Ontional): the capacity depends on the card									
Strain Meas	urement (Stand	dard M	de)	as off the				
Bridge excit	ation	June							
Constant v	oltage ex	citati	on An	rox 2 or 5 V	'DC				
Constant o	urrent ev	citatio	on Ap	5107.2 01 5 1	DC				
Approx	5.7 mA (R	ridae	rocictor	CA 350 O)					
(Up to	5 km with	a_{1-c}	onduct	$r (0.5 \text{ mm}^2)$	chielded	cable)			
	16.7 mA (F	Ridae	rocista	$\frac{1200}{1200}$	sillelueu				
(Up to	2 km with	a 4-c	onduct	$r(0.5 \text{ mm}^2)$	shielded	cable)			
Scanning sn	eed 50 m	ng/ch:	annal	51 (0.5 11111)	Siliciaca				
Gage factor	2 00 fixe	d (Co	efficient	calculation	function	enables			
eage latter	correctio	n wit	h 2 00/l	(5)	anetion				
Initial value	memory	range	Same	as measuring	a range				
Measuring ran	nge. Resol	ution	and A	curacy	grange				
Measuring	n Range	Reso	lution		Accuracy				
0 to ±50 k u	m/m	1	um/m	±(0.05% of r	eading + 1) µm/m			
±50 k to 500) k µm/m	10	um/m	±(0.05% of re	eading + 1	0) µm/m			
Strain Meas	urement (High	-Resolu	tion Mode)					
Constant vo	ltage exci	itatio	n Appr	ox. 5 VDC					
Constant cu	rrent excit	tatior	n Appro	x. 16.7 mA (Br	ridge resist	ance 350 Ω)			
(Up to 2 km v	with a 4-cc	onduc	tor (0.5	mm ²) shielde	ed cable)	,			
Scanning spe	eed 280 r	ms/ch	annel	,					
Gage factor	2.00 fixe	d (Co	efficient	calculation	function	enables			
0	correctio	n wit	h 2.00/I	(s)					
nitial value m	emory rar	nge 1	Same as	measuring r	ange				
Measuring ran	nge, Resol	ution	and A	curacy					
Measuring	g Range	Reso	lution	A	Accuracy				
0 to ±20 k μ	.m/m	0.1	um/m	±(0.05% of r	eading + ().3) µm/m			
±20 k to 200) k µm/m	1		0 to ± 20 k µm/m 0.1 µm/m $\pm (0.05\%$ of reading + 0.3) µm/m					
±20 k to 200 k μm/m 1 μm/m ±(0.05% of reading + 3) μm/m									
Notes: 1. Avail	lable only w	ith full	bridge s	±(0.05% of r stem (120 to	eading + 3 1000 Ω)	s) µm/m			
Notes: 1. Avail 2. Bridg 3. Meas	lable only w e resistance s	ith full should l	um/m bridge s be 350 Ω 5 k um/m	±(0.05% of r stem (120 to or bridge excita	eading + $\frac{1}{2}$ 1000 Ω) tion with co	nstant curren			
Notes: 1. Avail 2. Bridg 3. Meas 4. Avail	lable only w e resistance s uring range is lable only w urement (ith full should l s 0 to 1! ith dec	um/m bridge s be 350 Ω 5 k μm/m dicated s - speed	±(0.05% of r ystem (120 to or bridge excita for bridge excita canners. Mode)	eading + 3 1000 Ω) tion with co tion with co	a) μm/m onstant curren nstant current			
Notes: 1. Avail 2. Bridg 3. Meas 4. Avail Strain Measu Bridge excit Constant	lable only w e resistance s uring range is able only w urement (ation voltage e>	ith full should l s 0 to 1! ith dec (High- xcitat	um/m bridge s be 350 Ω 5 k μm/m dicated s -speed ion Ap	±(0.05% of r ystem (120 to or bridge excita for bridge excita canners. Mode) prox. 2 VDC	eading + 3 1000 Ω) tion with co tion with co	s) µm/m Instant curren			
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Current Measurement (Standard Mode)					
Scanning speed 50 ms/channel					
Initial value me	emory rang	ge Same	as measu	ring range	
Measuring ran	ge, Resolu	tion and	Accuracy		
Channel Mode Mea	suring Rang	ge Resoluti	ion	Accuracy	
1/50 mA 0 to	o ±50.00 mA	Α 10 μ <i>Α</i>	A (±0.05%	6 of reading + 0.01) mA	
Notes: 1. Externa 2. Stated	al shunt resis accuracy do	stor (High- es not incl	accuracy 25 ude the ext	50 Ω) is required. ernal shunt resistor.	
Current Measu	rement (H	igh-spee	d Mode)		
Scanning speed	d 20 ms/c	hannel			
Initial value me	emory rang	ge Same	as measu	ring range	
Measuring ran	ge, Resolu	tion and	Accuracy		
Channel Meas	suring Rang	e Resolutio	n	Accuracy	
1/50 mA 0 to	+50.00 mA	10 µA	+(0.08%	of reading + 0.01) mA	
Notes: 1. Availab	le only with	dedicated	scanners.		
2. Externa 3. Stated a	l shunt resist ccuracy does	tor (High-a not include	e the externation of the externa) Ω) is required. I shunt resistor accuracy.	
Temperature N	leasureme	nt with T	hermocou	ples (Standard Mode)	
Scanning speed	d 50 ms/c	hannel			
Measuring ran	ge, Resolu	tion and	Accuracy		
Type Measurir	ng Range	Resolution	Accuracy	Internal Reference Junction Compensator Accuracy	
K -200.0 to	1230.0 °C		±0.7°C	±0.5 °C	
T -200.0 to	400.0 °C		±0.7°C	(With input terminal temperature balanced	
E -200.0 to	660.0 °C	0.1°C	±0.5°C	in an ambient)	
R -0 to 1760	0.0 °C		±0.0 C +2.2°C	(Temp. range of 0 to 50 °C)	
Notes: 1. Accurac	ies do not in	clude the ii	- nternal refer	ence junction	
compen 2 Tho roto	sator accura	cy.	sator is swit	chable between internal	
and exte	ernal.	, comper			
3. Thermo	couple resist	ance shoul	d be 1 kΩ o	r less.	
Temperature N	/leasureme	ent with	Civil Engir	eering Transducers	
with a thermal	sensor (St	andard N	/lode)		
Scanning speed	d 50 ms/c	hannel			
Measuring ran	ge, Resolu	tion and	Accuracy		
Measuring Ra	ange	Resolu	tion	Accuracy	
-50.0 to 200.0)°C	0.1	°C	±0.5°C	
in a sin	gle channel		temperatur	e are measured	
2. Strain r	neasuring ra	anges are	the same as	in strain measurement	
-	duru mouc.				
Temperature N	/leasureme	ent with	Platinum I	Resistance	
Temperature N Thermometer I	/leasureme Bulb (Stan	ent with l dard Mo	Platinum I de)	Resistance	
Temperature M Thermometer I Scanning speed	/leasureme Bulb (Stan d 50 ms/c	ent with I dard Mo hannel	Platinum I de)	Resistance	
Temperature M Thermometer I Scanning speed Measuring ran	Jeasureme Bulb (Stan d 50 ms/c ge, Resolu	ent with l dard Moo hannel tion and	Platinum I de) Accuracy	Resistance	
 Temperature M Thermometer I Scanning speed Measuring randim Type 	Aleasureme Bulb (Stan d 50 ms/c ge, Resolu Measurin	ent with I dard Moo hannel tion and ng Range	Platinum I de) Accuracy Resoluti	Resistance on Accuracy	
Temperature M Thermometer I Scanning speed Measuring ran Type Pt100 International Pt100 Internation Internation International Pt100 Internation Inter	Aleasureme Bulb (Stand 50 ms/c ge, Resolu Measurin -200.0 to 0	ent with I dard Moo hannel tion and g Range 660.0°C	Platinum I de) Accuracy Resoluti 0.1°C	on Accuracy ±0.3°C	
Temperature N Thermometer Scanning speed Measuring ran Type Pt100 JPt100 Note: Connection	Measureme Bulb (Stan d 50 ms/c ge, Resolu Measurin -200.0 to 6 -200.0 to 9	ent with I dard Moo hannel tion and tion and 660.0°C 510.0°C (tem	Platinum I de) Accuracy Resoluti 0.1°C	on Accuracy ±0.3°C	
Temperature N Thermometer I Scanning speee Measuring ran Type Pt100 JPt100 Note: Connection Measurement 1	Measureme Bulb (Stan d 50 ms/c ge, Resolu Measurin -200.0 to (-200.0 to (-200.0 to (-3 s - wire s) with Poter	ent with dard Moo hannel tion and <u>og Range</u> 660.0°C 510.0°C stem	Platinum I de) Accuracy Resoluti 0.1°C	Accuracy ±0.3°C	
Temperature N Thermometer I Scanning speee Measuring ran Type Pt100 JPt100 Note: Connection Measurement * Scanning speee	Measureme Bulb (Stan d 50 ms/c ge, Resolu Measurin -200.0 to 4 -200.0 to 4 -200.0 to 5 m is 3-wire sy with Poter d 50 ms/	ent with I dard Moo hannel tion and g Range 660.0°C 510.0°C stem tiomete channel (Platinum I de) Accuracy Resoluti 0.1°C r Sensor	Accuracy ±0.3°C	
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Power Supply 100 to 240 VAC (AC-operated version)	External I/O Unit UIO-60A
10 to 16 VDC (DC-operated version)	Output ALARM signal: 4 channels (High/low limit checking)
Note DC-operated version has power control function.	BUSY signal: 1 channel
Current Consumption	Input START signal: 1 channel
0.5 A or less: 100 VAC (With 3 dedicated scanners mounted)	STOP signal: 1 channel
4 A or less: 12 VDC (With 3 dedicated scanners mounted)	RESET signal: 1 channel
Dimensions	RAINFALL signal: 1 channel
UCAM-60B: 360 W x 88 H x 400 D mm (Excluding protrusions)	Operating Temperature 0 to 50°C
UCAM-65B: 327 W x 88 H x 365 D mm (Excluding protrusions)	Operating Humidity 20 to 85% RH (Non-condensing)
Weight UCAM-60B: Approx. 6.3 kg, UCAM-65B: Approx. 5.0 kg	Dimensions: 90 W x 50 H x 180 D mm (Excluding protrusions).
(Excluding scanner)	Weight: Approx 140 g
Standard Accessories	External Scanners USB-70B
AC power cable P-18 with 2-pin conversion plug CM-39 (AC-operated	Models
version) DC power cable P-76 (DC-operated version)	LISB-70B-10 (For general strain measurement)
Recording paper UCAM-60A-RP (1 roll for UCAM-60B only)	LISB-70B-20 (For general strain meas, with NDIS connectors)
Control Software UCS-60B for UCAM-65B only (CD-R)	LISB-70B-30 (For civil engineering, with lightning arresters)
Optional Accessories Recording Paper LICAM-60A-RP (10 rolls/pack)	Channels 50/unit
	Mossuring Channel Mode
Dedicated Scanner USS-61B/62B/63B	Selected for each channel from the mainframe
Models USS-61B (TEDS compatible)	
USS-62B (With NDIS connectors, TEDS compatible)	LICE 70B 10. Strein gagge Strein gagge transdugers
USS-63B (For civil engineering measurement,	USB-70B-10. Strain gages, Strain-gage transducers,
TEDS compatible, with lightning Arresters)	potentiometer,
Channels 10/unit	
Switching Terminals Semiconductor relays	USB-70B-20: Strain gages, Strain-gagee transducers,
Input Terminals Connect to lead wire by either soldering	potentiometer,
or screwing.	DC voltage-output instruments, thermocouples
NDIS connectors (USS-62B)	(Iransducer with NDIS connector is required)
One-touch terminal block JT-1A (Optional)	USB-70B-30: Strain gages, strain-gage transducers,
Lightning Arresters Built in USS-63B	potentiometer,
Operating Temperature 0 to 50°C	DC voltage-output instruments,
Operating Humidity 20 to 85% RH (Non-condensing)	thermal Sensors (Thermo-couples, platinum resistance
Dimensions 320 W x 28 H x 80 D mm (Excluding protrusions)	thermometer bulbs, civil engineering transducers with
Weight USS-61B: Approx. 800 g (Including terminal cover)	a thermal sensor),
USS-62B: Approx. 1 kg (Including terminal cover)	lightning arresters built in
USS-63B: Approx. 900 g (Including terminal cover)	Power Supply Supplied from data logger. If the cable is extended
Standard Accessories	or if 4 or more scanners are connected, an optional
Terminal cover, Channel label and for USS-62B, NDIS	UPS-70B should be mounted into scanners.
	UPS-70B operates on 100 to 240 VAC (100 to 127 VAC
Scanner Interfaces USI-67A	or 220 to 240 VAC automatic switchover)
Connectable Scanners USB-70 series	Operating Temperature 0 to 50°C
Connectable Scanners Max. 20	Operating Humidity 20 to 85% RH (Non-condensing)
Operating temperature 0 to 50°C	Dimensions 302 W x 107 H x 500 D mm (Excluding protrusions)
Dimensional OD W(v 50 Hv 162 Dimensional)	Weight Approx. 7.3 kg (USB-70B-10)
Dimensions 99 W x 50 H x 163 D mm (Excluding protrusions),	Approx. 8.5 kg (USB-70B-20)
weight Approx. 160 g	Approx. 7.7 kg (USB-70B-30)
	Standard Accessories Connection Cables N-24 (1 m)
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USI-67A	

Dimensions



